

REMARKS

In response to the Office Action mailed March 10, 2005, Applicants respectfully request reconsideration. To further the prosecution of this Application, Applicants submit the following remarks, and have added new claims. The claims as now presented are believed to be in allowable condition.

Claims 1-20 were pending in this Application. Claims 21-25 have been added. Accordingly, claims 1-25 are now pending in this Application. Claims 1, 2, 10, 11 and 19 are independent claims.

Preliminary Matters

Applicants wish to point out that Applicants filed an Information Disclosure Statement on June 3, 2005. This Information Disclosure Statement makes information from a communication from a foreign patent office of record in this Application in accordance with 37 CFR 1.97.

Allowed Claims

Claims 2-5, 9, 11-14 and 18 were objected to as being dependent on a rejected base claim but were deemed allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Applicants reserve the right to rewrite claims 4-5, 9, 13-14 and 18 in independent form to include all of the limitations of the base claim and any intervening claims in order to obtain their allowance, but will refrain from doing so until the outcome of Applicants' request for consideration is known.

Claims 2-3

Applicants have rewritten claim 2 in independent form. Accordingly, claim 2, and claim 3 which depends from claim 2 are now in allowable condition.

Claims 11-12

Applicants have rewritten claim 11 in independent form. Accordingly, claim 1, and claim 12 which depends from claim 11 are now in allowable condition.

Rejection under §103

Claims 1, 6-8, 10, 15-17 and 19-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Applicants' Admitted Prior Art (AAPR) in view of U.S. Patent No. 6,748,448 (Barrera et al.).

Applicants respectfully traverse each of these rejections and request reconsideration. The claims are in allowable condition because they patentably distinguish over the cited prior art.

AAPR discloses a data storage system 22 having a set of network interface cards 32-1, 32-2 (NICs 32), front-end circuitry 34, a cache 36, back-end circuitry 38 and a set of disk drives 40 having blocks 42 for storing data (page 3, lines 4-6). When a NIC 32 receives a block-based signal from a server 24, that NIC 32 conveys that block-based signal to the front-end circuitry 34 (page 3, lines 17-18). This conveyance typically involves changing the format of the signal, e.g., receiving a serial fiber optic signal from the server 34 and converting it into parallel-bus electrical signals for use by the front-end circuitry 34, or vice versa (page 3, lines 18-21). For example, when a server 24 writes data to the data storage system 22, a NIC 32 receives and converts that data into a format suitable for use by the front-end circuitry 34, and then provides that data to the front-end circuitry 34 (e.g., from a serial fiber optic signal to an electrical signal for a parallel bus) (page 3, lines 21-25). The front-end circuitry 34 then buffers the data in the cache 36 and notifies the back-end circuitry 38 of the arrival of the data (page 3, lines 25-26). The back-end circuitry 38 then copies the data from the cache 36 to the set of disk drives 40 (page 3, lines 26-27). To read data from the data storage system 22, the server 24 sends a block-based read command to the data storage system 22 (page 3, lines 28-29). A NIC 32 converts the read

command into a format suitable for use by the front-end circuitry 34, and then provides that that command to the front-end circuitry 34 (e.g., from a serial fiber optic signal to an electrical signal for a parallel bus) (page 3, line 29 through page 4, line 3). Next, the front-end circuitry 34 notifies the back-end circuitry 38 of the command (page 4, lines 3-4). In response, the back-end circuitry 38 transfers a copy of the data from the set of disk drives 40 to the cache 36 (page 4, lines 4-5). The front-end circuitry 34 then transfers the data from the cache 36 to the server 24 through the NIC 32 which provides the data in a format (e.g., a fiber optic signal) which is suitable for use by the server 24 (page 4, lines 5-8).

Barrera discloses a typical computer communications network showing an internet connection 12 linking a Web client 10 to a Web server 14, via LAN connection 15 (column 6, lines 1-6 and Fig. 1). When a Web page is served by the Web server 14 to the client 10, the client browser can send to the Web server 14 a request with a complete URL link to a selectable Web page, including its physical address (column 6, lines 25-28). Thus, the request can be passed by the server 14 directly to the data storage device 20 controller, avoiding the file I/O layer (column 6, lines 28-30). In another embodiment of Barrera, the function of returning the resource file to the client 100 is directly performed by the data storage device controller 102, and a URL includes a physical I/O address of a resource file (column 8, lines 30-34 and Fig. 3). The resource file is sent directly to the requesting client, without use of a server 104 (column 8, lines 34-36). For this purpose the data storage device controller 102 protocol, such as SCSI or IDE protocol is used and the data storage device controller 102 is directly connected via connection 108 and LAN connection 112, to the internet 106, and has its own IP address (column 8, lines 36-40).

Claims 1 and 6-8

Claim 1 is directed to a network interface card for a data storage system having a backplane and processing circuitry for performing block-based data access operations. The processing circuitry of the data storage system is

physically connected to the backplane of the data storage system. The network interface card includes a first port that is capable of coupling to an external network, a second port that is capable of physically connecting to the backplane of the data storage system, and control circuitry interconnected between the first port and the second port. The control circuitry is configured to, when the first port couples to the external network and the second port physically connects to the backplane of the data storage system: (i) receive file-based communications from the external network through the first port and provide block-based communications to the processing circuitry of the data storage system through the second port and the backplane in response to the file-based communications, (ii) receive block-based communications from the processing circuitry through the second port and the backplane and provide file-based communications to the external network through the first port in response to the block-based communications, and (iii) provide application server resources to operate as an application server that runs application-level programs.

In order to establish a *prima facie* case of obviousness, the Office Action must meet three criteria.

“First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.”¹

As will now be explained, there is no reasonable expectation of success in combining the AAPR with Barrera in the manner proposed by the Office Action.

In particular, the Office Action states at the bottom of page 2 through the top of page 3 that AAPR does not disclose a network interface card having control circuitry which is configured to, when a first port couples to an external network and a second port physically connects to a backplane of a data storage system: (i) receive file-based communications from the external network through

¹ *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

the first port and provide block-based communications to the processing circuitry of the data storage system through the second port and the backplane in response to the file-based communications, (ii) receive block-based communications from the processing circuitry through the second port and the backplane and provide file-based communications to the external network through the first port in response to the block-based communications, and (iii) provide application server resources to operate as an application server that runs application-level programs, as recited in claim 1. Applicants respectfully agree.

However, the Office Action on page 3 then contends that Barrera discloses a data storage device controller which receives a URL request from a client and returns a resource file directly to a Web client using HTTP. The Office Action then states that the a host server is bypassed and is thus free to run other application programs, and that it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teachings of Barrera in the AAPR system to have a faster data transfer. Applicants respectfully disagree with this contention. Support for such disagreement now follows.

The Office Action contends that the server 104 of Barrera is capable of running other application programs since the data storage controller directly handles a URL request. For this to take place, Barrera relies on the existence of an IP connection 108 directly between a data storage device controller 102 and the internet 106 (see Fig. 3 of Barrera). However, if one were to argue that this aspect of Barrera can be combined into the AAPR system, a NIC 32 of the AAPR system arguably would be the server 104 of Barrera, there would need to be a connection 108 directly between the AAPR network 26 and the AAPR back-end circuitry 38 (see Fig. 1 of AAPR). Unfortunately, the purpose of the NIC 32 is be the interface between the AAPR network 26 and the AAPR front-end circuitry 34. Accordingly, one cannot simply have an IP connection 108 directly between the AAPR network 26 and the AAPR back-end circuitry 38, as the Office Action contends. Such a connection 108 would thwart the operation of the data storage

system 22 (e.g., caching data in the cache 36). As a result, one could not combine Barrera with the AAPR as the Office Action contends. There can simply be no path in the AAPR system to support the purpose of Barrera (i.e., no reasonable expectation of success in combining the AAPR with Barrera) and thus the rejection of claim 1 under 35 U.S.C. §103(a) is improper.

For the reasons stated above, claim 1 patentably distinguishes over the cited prior art, and the rejection of claim 1 under 35 U.S.C. §103(a) should be withdrawn. Accordingly, claim 1 is in allowable condition.

Because claims 4-9 depend from and further limit claim 1, claims 6-8 are in allowable condition for at least the same reasons.

Claims 10 and 15-17

Claim 10 is directed to a method which is performed in a data storage system having a backplane and processing circuitry for performing block-based data access operations. The method includes the steps of coupling a first port of a network interface card to an external network, and physically connecting a second port of the network interface card to the backplane of the data storage system. The method further includes the step of configuring control circuitry of the network interface card to: (i) receive file-based communications from the external network through the first port and provide block-based communications to the processing circuitry of the data storage system through the second port and the backplane in response to the file-based communications, (ii) receive block-based communications from the processing circuitry through the second port and the backplane and provide file-based communications to the external network through the first port in response to the block-based communications, and (iii) provide application server resources to operate as an application server that runs application-level programs.

As mentioned above in connection with claim 1, the basis of the rejection of claim 1 relies on a combination of the AAPR and Barrera, but there is no reasonable expectation of success in combining the AAPR with Barrera in the

manner proposed by the Office Action. Thus, the rejection of claim 10 under 35 U.S.C. §103(a) is improper.

For the reasons stated above, claim 10 patentably distinguishes over the cited prior art, and the rejection of claim 10 under 35 U.S.C. §103(a) should be withdrawn. Accordingly, claim 10 is in allowable condition.

Because claims 15-17 depend from and further limit claim 10, claims 15-17 are in allowable condition for at least the same reasons.

Claims 19-20

Claim 19 is directed to a data storage system having a network interface card similar to that recited in claim 1. Accordingly, the arguments for patentability presented above for claim 1 also apply to claim 19. Thus, the rejection of claim 19 under 35 U.S.C. §103(a) is improper.

For the reasons stated above, claim 19 patentably distinguishes over the cited prior art, and the rejection of claim 19 under 35 U.S.C. §103(a) should be withdrawn. Accordingly, claim 19 is in allowable condition.

Because claim 20 depends from and further limit claim 19, claim 20 is in allowable condition for at least the same reasons.

Newly Added Claims

Claims 21-25 have been added and are believed to be in allowable condition. Claim 21 depends from claim 1. Claim 22 depends from claim 10. Claims 23-25 depend from claim 19. Support for claims 21, 22 and 25 is provided within the Specification, for example, on page 9, line 14 through page 10, line 22; page 11, line 7 through page 13, line 12; and Figs. 2 and 4. Support for claim 23 is provided within the Specification, for example, on page 13, line 14 through page 15, line 5 and Fig. 5. Support for claim 24 is provided within the Specification, for example, on page 10, line 24 through page 15, line 5 and Figs. 3-5. No new matter has been added.

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Conclusion

In view of the foregoing remarks, this Application should be in condition for allowance. A Notice to this affect is respectfully requested. If the Examiner believes, after this Amendment, that the Application is not in condition for allowance, the Examiner is respectfully requested to call the Applicants' Representative at the number below.

Applicants hereby petition for any extension of time which is required to maintain the pendency of this case. If there is a fee occasioned by this Amendment, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-0901.

If the enclosed papers or fees are considered incomplete, the Patent Office is respectfully requested to contact the undersigned collect at (508) 366-9600, in Westborough, Massachusetts.

Respectfully submitted,



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